

Robotics/Mechatronics

Subject/Course: **Robotics/ Mechatronics**

Grade (s): 10, 11,12 Designer (s)

Stage 1: Desired Results

Core Standard(s): **RBMTMT3.1**

. Build circuit according to schematic diagram

Understandings: Students will understand that....

- **There are single acting and doubling acting cylinders.**
- **The operation of single acting and doubling acting cylinders are different.**
- **There are a variety of applications for single acting and double acting cylinders.**
- **Installation and operation of cylinders are simple pneumatic circuits.**

Essential Question(s):

- **What is a single acting cylinder?**
- **What type of energy is needed for a pneumatic circuit?**
- **What type of application can use a simple double acting cylinder?**

Students will know....

- **Symbols for single and double acting cylinders.**
- **What type of energy is needed for a pneumatic circuit.**

Student will be able to

- **Wire simple pneumatic circuits using a single acting and double acting cylinders using air.**

Stage 2: Assessment Evidence

What evidence will show that students understand?

X	Performance Task	X	Project	X	Quizzes
X	Tests	X	Informal Observations	X	Discussions
	Interviews	X	Self-Assessment		Other

Stage 3: Learning Plan

Motivation – Introduce and Explain

How will you help students know *where* they are headed and why? How will you *hook* students through engaging and thought-provoking experiences that point toward big ideas, essential questions, and performance tasks?

- **Using industry publications to illustrate the use of pneumatic circuits.**
- **Demonstrate the pneumatic circuit.**
- **Have students design a pneumatic circuits using other pneumatic components.**

Model (Teacher presentation):

What instruction is needed to *equip* students for final performance?

- **All applicable safety regulations and policies will be discussed and enforced in all hands-on activities prior to final performance evaluation**
- **Pneumatic symbols will be reviewed**
- **Discuss the applications of pneumatic circuits.**

Guided and Independent Practice (Student Engagement):

What events can students *experience* to make the ideas and issues real? What learning activities will help student to *explore* the big ideas and essential questions?

- **Use of field trips, job shadowing, and internships to place the student in actual work environments where they may observe pneumatics circuit applications.**
- **Hands on activities where theories are applied and results can be verified.**
- **Students have the opportunity to experiment with a variety of pneumatic components and test their functions.**

Reflection/Assessment:

How will you cause students to *reflect* and *rethink* to dig deeper into core ideas? How will you guide students in *rehearsing*, *revising*, and *refining* their work based on feedback and self-assessment? How will students *exhibit* their understanding about their final performances and products? How will you guide them in *self-evaluation* to identify the strengths and weaknesses in their work and set future goals?

- **Debrief students following field trips, job shadowing, and internships as to the applications of pneumatic circuits.**
- **Ask students to use the web to find uses and applications of pneumatic circuits.**
- **Provide students the opportunity to do a career search in the area of fluid power.**